

RECOMMENDATIONS



Adopting a segment-specific approach to integrated vegetation management necessitated changes in policy, planning, and training and, moreover, a philosophy for roadside management.

Caltrans enacted a study to successfully implement an integrated vegetation management program in its diverse right-of-way corridor network. Vegetation management is associated with numerous corridor management issues and demands considerable roadside maintenance efforts. The goals of the study were to:

- ♦ develop better processes for roadside design and consideration of long-term maintenance, and
- ♦ develop vegetation management strategies that satisfy Caltrans' objectives of public and worker safety, environmental quality, herbicide reduction, cost-effectiveness, and public perception.

The recommendations for achieving these goals are summarized below.

PROCESS FOR QUALITY ROADSIDE DESIGN AND MANAGEMENT

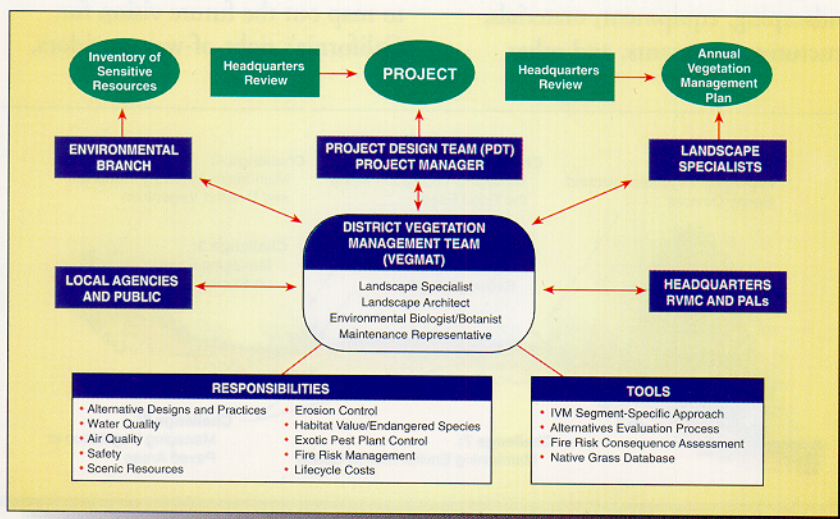
To achieve the goal of a better process for quality roadside design and management, revisions to Caltrans manuals and policies should be implemented. The purpose of the revisions would generally be to promote the concept of IVM and to facilitate quality, future-minded, segment-specific design. Policy

revisions should focus on establishment and empowerment of cross-functional teams dedicated to resolving complex roadside issues. These cooperative efforts may operate within the established Project Development Teams (PDTs), as a new ad hoc or permanent Vegetation Management Team within each district, and/or as a permanent headquarters roadside design unit, or quality team. The teams should be comprised of skilled district and/or headquarters staff, such as landscape architects and landscape specialists, to ensure that life cycle maintenance and corridor management issues are considered throughout project development.

REVISIONS TO CALTRANS MANUALS

The *Project Development Procedures Manual*, which provides policies, procedures, and guidelines for project development on state highway projects, should be revised to ensure that maintenance, vegetation management and, moreover, corridor management are considered early in the project development process, specifically during the Project Study Report (PSR) phase.

The *Highway Design Manual*, which establishes policies and procedures for designing state highways, should be



This schematic exemplifies how the Vegetation Management Team (VEGMAT) may facilitate better roadside design.

revised to increase consideration of managing the right-of-way corridor on a long-term basis and to promote the *roadside* design process commensurate to *roadway* design.

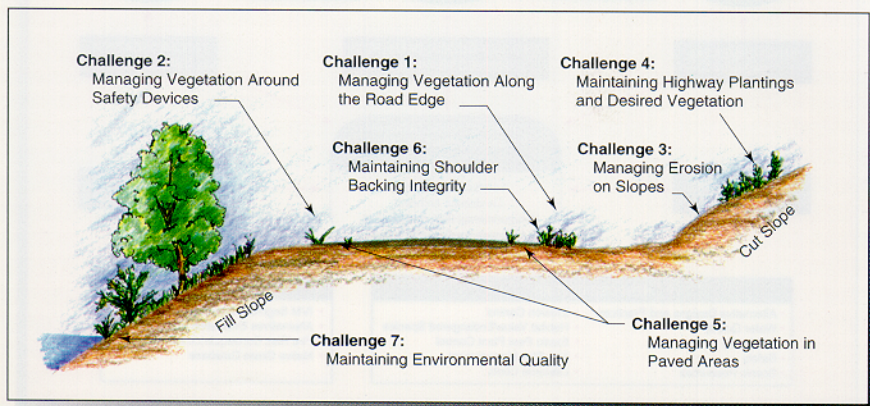
The Highway Construction Manual, which guides construction of highway facilities, should be revised to allow for more input and sufficient review by qualified maintenance personnel, including review of change orders.

The Highway Maintenance Manual is intended to establish uniform practices and procedures for maintenance of existing highway facilities. The manual addresses maintenance standards and policies for resource management, vegetation control, landscaping, equipment, materials, structures, treatments, and other

factors. Revisions to the manual should reflect Caltrans' goal for seeking alternatives to chemical control and meeting the objectives of safety, environmental quality, reduced herbicide use, cost effectiveness, and better public perception.

CORRIDOR MASTER PLAN

In developing an IVM program, it became clear that a broader look at the entire right-of-way corridor must be considered because of the close relationships between vegetation management, storm water management, scenic resources, environmentally sensitive areas, and many other issues. Development of a highway corridor master plan is recommended to map out the future vision for California's right-of-way corridors,



This cross section depicts the most common and demanding vegetation management challenges faced by Caltrans.

recognize the relationships of these issues, and determine how they affect and are affected by highway design and management.

The master plan should characterize each roadway segment, indicating aspects such as scenic resources, environmentally sensitive areas, special-status species, adjacent land use, noxious weeds, projected average daily traffic, and other factors and prescribe the objectives for that roadway. The master plan should be coordinated with federal, state, and local jurisdictional agencies to optimize resources and ensure consistency with other developed plans.

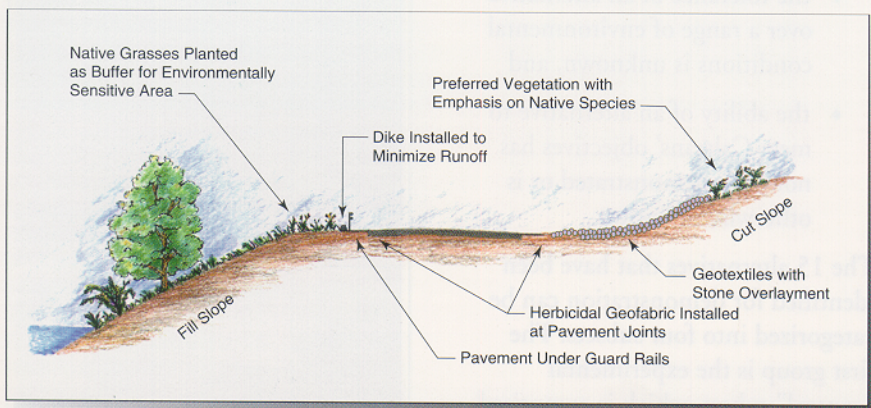
Such a plan would enable:

- ♦ designers to consider the predetermined environmental

and cultural issues associated with a corridor segment

- ♦ landscape architects to reference native species and establish overall site-specific objectives for highway plantings
- ♦ maintenance personnel to be aware of environmentally sensitive areas and prescribe best management practices
- ♦ systematic upgrades and retrofits of facilities as new designs become available
- ♦ cooperative management efforts with local public works agencies

The corridor master plan concept may be tested as a district pilot project, overseen by a multidisciplinary steering committee.



This cross section illustrates how these challenges may be addressed by a segment-specific integrated approach to design and management.

DEMONSTRATION PROJECTS

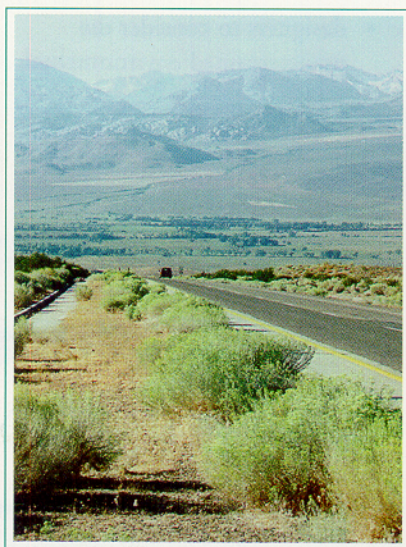
Some top-ranking alternatives as identified in the analysis have not been extensively tested or implemented. These alternatives and combinations of alternatives are appropriate for demonstration projects. The reasons an alternative may merit further testing include:

- ♦ the strategy is not part of Caltrans' current typical vegetation control regimen,
- ♦ new products or new applications of existing products have been developed,
- ♦ existing studies and information on an alternative application are lacking,
- ♦ the tolerance of an alternative over a range of environmental conditions is unknown, and
- ♦ the ability of an alternative to meet Caltrans' objectives has not been demonstrated or is otherwise unknown.

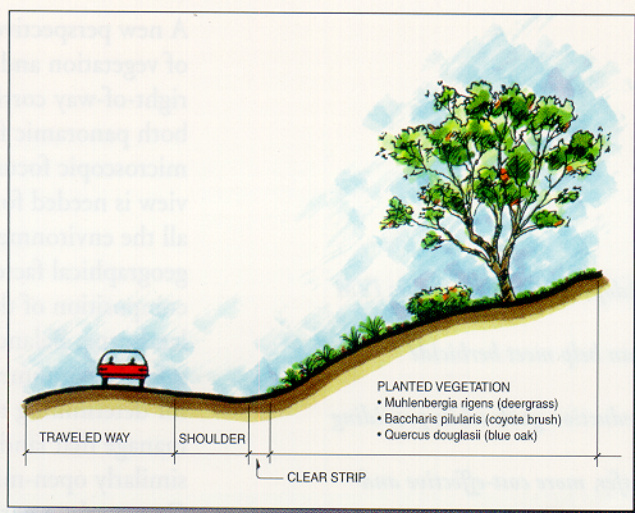
The 15 alternatives that have been identified for demonstration can be categorized into four subsets. The first group is the experimental "control" subset, which is comprised of alternatives that provide baseline

conditions to test all other methods against, and includes the status quo or typical treatments of herbicide application and mowing. The second includes surface area or soil treatments, the third group is comprised of road edge treatments, and the final group includes practical treatments or those which may be generally characterized as "practices" rather than constructed or applied elements.

An area where no active vegetation management is to be conducted is also included in the control, and will demonstrate the level of vegetation management required in a specific right-of-way segment or whether any



Cross section of planted preferred vegetation possibly suitable for foothill areas transitioning from the California Grassland to Sierran and Pacific Forest Ecoprovinces.



management is necessary. The efficacy of the alternatives should be evaluated for at least five years to gauge environmental variability, seasonal tolerance, and anticipated life cycle.

ALTERNATIVE VEGETATION SPECIES

One of the top-ranking alternatives was the use of preferred vegetation species. As indicated in the introduction, roadside environments are often not supportive of native or other beneficial plant species. However, one of the best strategies for minimizing vegetation control problems is to establish plants that do not require

ongoing maintenance, do not threaten adjacent resources or devices, and do not compromise safety. The successful establishment of beneficial species is dependent on a process of detailed site evaluation, selection of appropriate species, adequate site preparation, and choosing the proper planting technique. A matrix was developed that identifies and categorizes over 20 botanical, horticultural, and environmental factors that should be considered for determining the appropriateness and suitability of a given species for a specific right-of-way segment. The matrix is intended as a guide for site-specific species selection.

CONCLUSION

Adopting segment-specific IVM can help meet herbicide reduction goals while providing safer, more cost-effective and environmentally sound highway corridors.

A new perspective on management of vegetation and other associated right-of-way corridor issues requires both panoramic foresight and microscopic focus. A very broad view is needed for understanding all the environmental, physical, and geographical factors that influence composition of the roadside landscape. Balancing the values of safety, environment, and economics for determining the methods to manage that landscape requires a similarly open-minded vision. Conversely, a narrow, focused look must be taken at each homogenous right-of-way segment to understand its unique character and the specific integrated vegetation management regime to apply.

The tools for meeting these challenges are teamwork and training for designing better roadsides; consideration of long-term maintainability in project development; and a master plan to establish the framework for quality, integrated corridors.



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